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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/734,816

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Steven A. Soper

Soper 0023.1

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06/21/2010

PATENT DEPARTMENT

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EXAMINER

LEE, SIN J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

06/21/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/734,816

Applicant(s)

SOPER ET AL.

Examiner

Sin J. Lee

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. Previous 102(e) rejection over Lauicht et al (US 2007/0275080 A1) is hereby withdrawn because as correctly argued by applicants, the cited portion of Lauicht has an effective filing date after the nonprovisional filing date of present application.
2. In view of the amendment, previous 103(a) rejection over Brandow et al (US 6,436,615 B1) is hereby withdrawn. Brandow's ligand Q-Z contains the chemical group Z, which reacts with the carboxyl group generated in the imagewise-exposed portions, and Brandow's Z group can be an aliphatic amine (which forms an imine group subsequently, instead of an amide group as recited in present claim 1) or alcohol group. Thus, Brandow does not teach or suggest present chemical groups listed in (vi) of present claim 1.
3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 1, applicants recite that "the one or more reactants comprise a *chemical group* with which the bound carboxyl groups react; wherein the chemical group is selected from the group consisting of . . . ceramics, piezoelectric materials, semiconductors, . . . polymers, . . ." There seems to be no proper support for this new limitation in the original disclosure.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, applicants recite that "the one or more reactants comprise a *chemical group* with which the bound carboxyl groups react; wherein the chemical group is

selected from the group consisting of . . . ceramics, piezoelectric materials, semiconductors, . . . polymers, . . ." It is not clear to the Examiner how, for example, "ceramics", "piezoelectric materials", "semiconductor" or "polymers" can be considered as a chemical group.

Appropriate correction/clarification is required.

Claim Rejections - 35 USC § 102

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
9. Claims 1, 2, 4, 6, 7, 10 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakagawa (US 2003/0143411 A1) (with Tsubouchi et al (3,767,579) which is being cited here merely to support the Examiner's assertion that calcium carbonate is a piezoelectric ceramic material).

In claim 1 and [0088] (see also Fig.1A-1D and Fig.2E-2F), Nakagawa teaches the following;

1. A process for forming a surface-conductive resin, comprising steps of:

selectively generating reactive groups, which is capable of substitution under alkaline conditions, on a resin surface;

bringing the reactive groups into contact with an alkaline solution so as to substitute parts of the reactive groups by alkali metal ions;

bringing the substituted parts by the alkali metal ions into contact with an ion solution of a conductive material so as to substitute the alkali metal ions by ions of the conductive material; and

reducing the ions of the conductive material so as to deposit the conductive material on the resin surface.

As preferable reactive groups, Nakagawa teaches the carboxyl (COOH) group (see [0051]). The reactive groups can be selectively generated in the form of a pattern by light exposure through a pattern mask (see [0035]). As the resin, Nakagawa teaches that polyimide is preferred (see [0043]). The reactive groups generated (such as the COOH group) are brought in contact with an alkaline solution such as calcium carbonate solution. See [0054] and [0058]. Calcium carbonate is a piezoelectric ceramic material, as evidenced by Tsubouchi et al, col.4, lines 5-10. After that, ions (such as silver, gold, nickel, copper, platinum and palladium) of a conductive material substitute the alkali metal ions (see [0065]-[0068]). Finally, the ions of the conductive material are subsequently reduced so that the conductive material deposits on the surface of the resin (see [0076]). Thus, Nakagawa teaches present inventions of claims 1, 2, 4, 6, 7, 10 and 14.

10. The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure. Ogawa (4,945,028) teaches the following in its claim 1:

1. A pattern forming method comprising the steps of: preparing an energy-beam sensitive and hydrophobic film which comprises providing energy-beam sensitive molecules or polymers which contain energy-beam sensitive and hydrophobic groups which form hydrophilic groups when irradiated with said energy-beam, on the entire surface of a substrate; selectively changing portions of the surface of said hydrophobic film to hydrophilic portions in a pattern-wise manner by selectively irradiating said film with said energy-beam; selectively depositing an additional monomolecular film or an additional multi-monomolecular built-up film on said hydrophilic portions of the irradiated film by chemically adsorbing a silicon-containing reagent; and performing a dry etching process using said additional monomolecular film on said additional multi-monomolecular built up film as a mask to form a thin film pattern.

Thus, Ogawa teaches that polymer containing hydrophobic groups, which turns hydrophilic groups (*such as* $-COOH$) upon irradiation, is selectively irradiated with energy-beam. On the selective portions of the polymer where the hydrophilic groups are formed upon irradiation, additional monomolecular film is formed by chemically adsorbing a silicon-containing reagent such as polysiloxane compound. See [Example 2] and Figure 10A-10F. After that, the unirradiated portion of the polymer is removed by an etching step. Thus, Ogawa's polymer is being used as a photoresist material according to the reading of present specification, [0116] (the paragraph explains that a "photoresist" is a compound that acts as a positive or negative resist in response to the wavelength of actinic light used in a particular process to generate or create a pattern on another material, and that any photoresist in areas not corresponding to the pattern is typically removed from the substrate during development, after creation of the pattern). Therefore, Ogawa does not teach present invention of claim 1 which requires

that the polymer is essentially free of any photoresist that is responsive to the actinic light at the fluence applied to the exposed portions of the polymer surface.

Cahalan (5,229,172) teaches irradiating a surface of a polymeric material in the presence of oxygen and then grafting acrylamide to the irradiated surface by contacting the irradiated surface with an aqueous solution including acrylamide monomer and ceric ion. However, there is no indication or suggestions that the irradiation step is *selectively* done *imagewise*. That is, the reference does not teach or suggest the presently required step of performing photooxidization in accordance with a pre-determined pattern.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sin J. Lee/

Primary Examiner, Art Unit 1795

June 17, 2010